REVIEW OF POWER SECTOR REFORMS IN MADHYA PRADESH

A. Background

1. The reform process of the Madhya Pradesh power sector had its genesis in the late eighties and early nineties when the sector was facing mounting financial burden and a peak power deficit in excess of 25%. Madhya Pradesh State Electricity Board (MPSEB), the state utility could never earn the stipulated minimum 3% return on its investment and instead needed a revenue subsidy of Rs17 billion in 1999 (or, as much as 40% of its revenue). MPSEB had at one point more than 60,000 employees for a 2,200 megawatt (MW) generation transmission distribution system. The transmission and distribution (T&D) losses were 47% – more than half of it was "non-technical" or "commercial" losses.[1] The reform process was initiated in 1996 with the appointment of Tata Rao Committee to look into the restructuring of sector and increased private participation. The Committee came out with a report in 1997 that included key recommendations for functional division of MPSEB, formation of an electricity regulatory commission, private sector investment, etc. In 1998, the state government constituted Madhya Pradesh Electricity Regulatory Commission (MPERC), a statutory independent regulatory authority under the Electricity Regulatory Commission Act of 1998. In May 2000, a Memorandum of Understanding was signed between the Ministry of Power and the State Government to fast-track the reform process with support from the Government of India (the government). Subsequently, in July 2001, the state government enacted the Madhya Pradesh Vidyut Sudhar Adhiniyam (Madhya Pradesh Electricity Act of 2001) which provided for unbundling of state owned MPSEB as well as development of a competitive business environment in the state. In accordance with the Madhya Pradesh Reform Act, vertically integrated MPSEB was unbundled into five independent corporations with MPSEB as the holding company in July 2002. The Madhya Pradesh Reform Act was however superseded by the Electricity Act of 2003.

2. In 2000, there was another key development which had a huge impact on the power sector reforms in Madhya Pradesh. This was the physical partition of the state into Madhya Pradesh and Chhattisgarh that required the erstwhile MPSEB to be split into (i) MPSEB, and (ii) Chhattisgarh State Electricity Board (CSEB). The split, however, raised a number of issues around inequitable allocation of supply resources versus liabilities. As Table 1 summarizes, MPSEB was left to meet 78% of the energy requirements (including 90% of the heavily subsidized agricultural customers) using only 68% of the capacity, and effectively ended up with a significant peak shortfall and 64% of the total revenue. Therefore, MPSEB had started with an annual loss of Rs21 billion, while CSEB had positive profit of Rs9.3 billion. MPSEB needed significant financial assistance to the tune of Rs175.6 billion over 2002-2005 from the State Government that included *inter alia* (i) Rs74.6 billion of outstanding debt to domestic financial institutions that was absorbed by the government; (ii) Rs32.3 billion on subsidies; and (iii) Rs53.3 billion for capital investment projects. The debt restructuring efforts continued during 2007-2009 with an additional Rs111.4 billion provided to MPSEB (see footnote 1).

[1] ADB. 2011. *India: Madhya Pradesh Power Sector Development* Program, *Independent Evaluation Report*. Manila. Abhyankar. 2005. Looking Back at Power Sector Restructuring in the State of Madhya Pradesh, *Economic and Political Weekly,* Vol. XL, No. 48.

Table 1: Allocation between MPSEB and CSEB

Key Parameters	MPSEB	CSEB
Energy consumption	78%	22%
Capacity (MW)	3000 (68%)	1250 (32%)
Central Generation Share (MW)	1116	498
Peak surplus/deficit	-1690	+758
Employees	78%	22%
Revenues	64%	36%
Annual profit/loss (Rs billion)	-21	+9.3

CSEB = Chhattisgarh State Electricity Board, MPSEB = Madhya Pradesh State Electricity Board, MW = megawatt.
Source: Abhyankar (2005).

3. The reform of the Madhya Pradesh power sector that started more than 15 years ago comprises of the following key elements:

(i) Segregation of the vertically integrated Board into generation, transmission and distribution functions;
(ii) Corporatization of the utilities i.e. formation of limited companies under the Companies Act, 1956;
(iii) Rationalisation of tariffs for prices to cover at least 75% of the cost of supply of electricity by 2005;[2]
(iv) Continuous review of the working of the reorganized utilities/companies and taking measures to restructure them to achieve commercial viability through:
  (a) Rationalization of tariffs;
  (b) Reduction and eventual elimination of power theft within a stipulated timeframe.
(v) Limiting role of State Government to issue of policy directives;
(vi) 100% electrification of villages including full coverage of rural households
(vii) All statutory responsibilities of the State Government to be transferred to the State Electricity Regulatory Commission which was formed during the early phase of reform in 1998;
(viii) Augmenting state generation capacity with timely allocation of power from Central Generating Stations and expeditious processing of new generation investment proposals from the State including private sector participation and joint ventures on hydro projects;
(ix) Strengthening and enhancing transmission network in Madhya Pradesh to enable supply of power including development of a number of high voltage (HV) (400 kV and above) corridors;
(x) Reducing T&D losses including development of a HV distribution system in a phased manner; and
(xi) Financial reform of the sector.

4. The original reform agenda has been followed over the last 12 years, albeit there were many practical constraints that limited the achievement in some cases, not the least of which was a continued poor financial performance of the state utilities. In July 2002, MPSEB was divided into five state-owned companies – one each for generation and transmission and three for distribution, namely:

(i) Madhya Pradesh Power Generation Corporation that catered for about 65% of state's generation with the remaining coming from the Central Generating Stations

[2] According to the Memorandum of Understanding between Ministry of Power (Government of India) and the Government of Madhya Pradesh, May 16, 2000.

and purchase from other states apart from a small quantum of hydro/wind generation.

(ii) Madhya Pradesh Power Transmission Corporation (MP Transco) that owns and operates the state power grid;

(iii) Distribution of electricity is looked after by three companies namely (a) Madhya Pradesh Madhya Kshetra Vidyut Vitaran Company (DISCOM-C); (b) Madhya Pradesh Poorva Kshetra Vidyut Vitaran Company (DISCOM-E), and (c) Madhya Pradesh Pashchim Kshetra Vidyut Vitaran Company (DISCOM-W).

5. For about three years since their formation, the new companies functioned just as the agents of MPSEB. All transactions including filing tariff revision petitions were performed under the head of MPSEB. On 1 June 2005, the companies started their independent operations. All transactions including filing tariff revisions are currently performed independently by these companies.

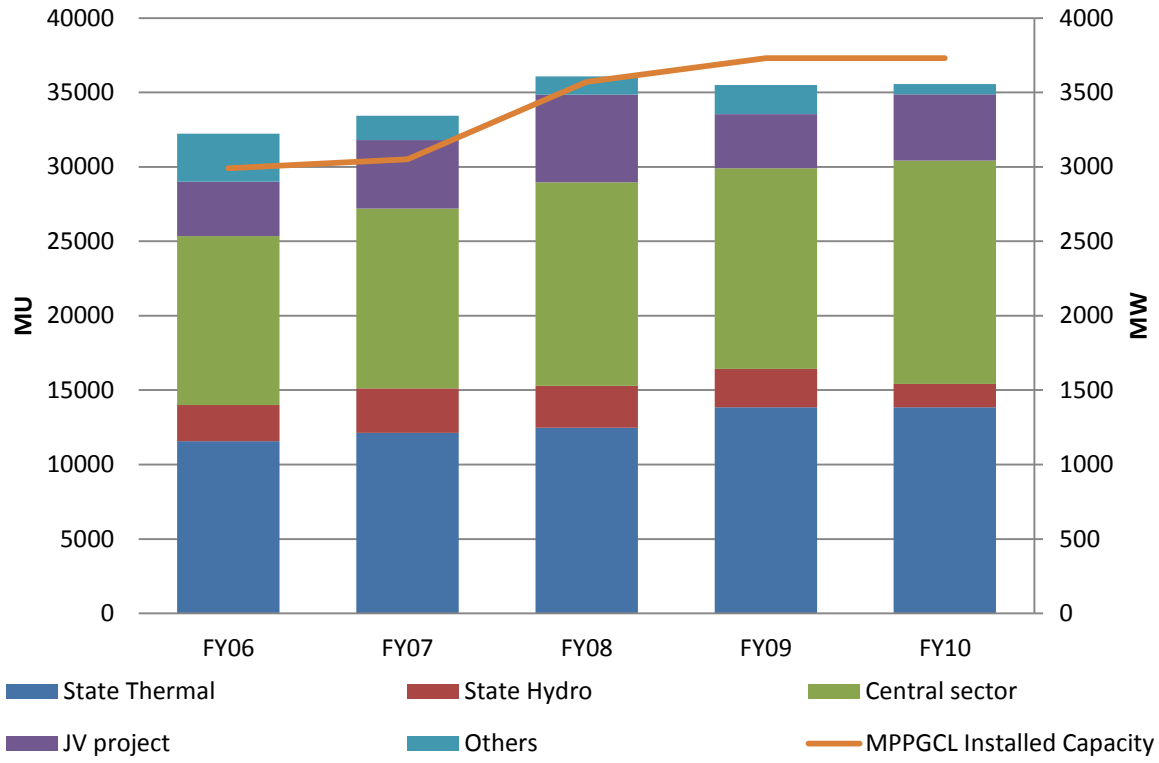
6. The Asian Development Bank (ADB) has played a significant role in the power sector reform since the nineties – most notably through its financing of the Sector Development Program (SDP) to develop an enabling policy environment and improve the financial performance of MPSEB. ADB had approved a total loan amount of $350 million including a $150 million policy-based program and an investment loan of $200 million. The program loan was disbursed in three tranches between March 2002 and November 2003 and the counterpart funds it generated were transferred to the State Government by the Government of India to support the financial restructuring of MPSEB and finance part of the adjustment cost associated with the SDP. The actual project cost at completion in 2007 including additional works approved in 2004 was $260 million, of which $179 million was financed by ADB.

7. SDP has been a significant part of the overall strategy adopted by the Central and State governments to identify and fix the structural problems in the Madhya Pradesh power sector. The regulatory and legal reforms have been effective in establishing a transparent regulatory environment for the power sector. The investment projects have been effective in containing and eventually reducing transmission and distribution losses. The more recent investment in high voltage distribution system and segregation of agricultural and residential feeders are likely to deliver further improvement to render the distribution utilities to become financially viable in future.

8. The early reform process in Madhya Pradesh as well as some of the other States in India paved the way for exploiting the opportunities presented through the national policy reform process, namely, the introduction of The Electricity Act 2003. In particular, the private sector participation in Madhya Pradesh got a boost albeit the continued poor financial performance of MPSEB meant that it had limited financial ability to honour power purchase agreements with the independent power producers (IPPs). Nevertheless, after a decade (1990-2000) that saw less than 900 MW of new capacity addition, there was 4,218 MW of new capacity that matured over 2002-2009, including 2,411 MW of state's share in the joint venture hydro projects. The installed capacity in the State (in all forms of ownership including MPPGCL, joint ventures, Central Sector and Other States) has increased from 4,000 MW in FY2011 to 10,632 MW at the end of FY2012. As per the generation expansion plan for the state, the generation capacity is estimated to be around 16,350 MW by the end of FY2015.[3]

[3] Energy Department, Government of Madhya Pradesh.

Figure 1: Growth of Supply Capacity in Madhya Pradesh



MU = million kilowatt hours, MW = megawatt.
Source: State Load Despatch Centre, Jabalpur.

9. While generation capacity has increased, demand over the years have also steadily grown to outpace supply. Table 2 shows the demand-supply balance for FY2012 and FY2014. MPSEB has faced significant energy and peak shortage over the years until recently.[4] For instance, in FY2012, the energy and peak requirement versus availability shows, Madhya Pradesh had close to 10% energy shortage. In comparison, Chhattisgarh had an energy deficit of 1.7%. Once the proposed generation projects are completed though, both regions in FY2013 are projected to have a healthy surplus. Madhya Pradesh in particular is projected to have a 20% peak period surplus according to the Load Generation Balance Report for FY2013 recently released by the Central Electricity Authority (CEA). This is a remarkable amelioration in supply capability considering that 5-6 years ago, MPSEB faced 13%-14% energy deficit to meet 33-34 TWh energy requirement. Although energy requirements over the last five years have increased from 34 TWh to 59 TWh (or 74%) it is remarkable that several large-scale generation projects have eventuated over this period to lead to an energy surplus situation.

[4] MPSEB was dissolved in March 2013. The references to MPSEB in this report are therefore historic performance of the organization.

Table 2: Demand Supply Balance in FY2012/13 and Projected Balance in 2013/14

State	FY	Requirement	Availability	Surplus/ Deficit	Surplus/ Deficit (%)
Energy (GWh)					
Chhattisgarh	2012/13	17,302	17,003	-299	-1.7
	2013/14	21,410	21,484	+74	+0.3
Madhya Pradesh	2012/13	51,783	46,829	-4,954	-9.6
	2013/14	59,431	63,112	+3,681	+6.2
Peak (MW)					
Chhattisgarh	2012/13	3,271	3,134	-137	-4.2
	2013/14	3,120	3,236	+116	+3.7
Madhya Pradesh	2012/13	10,077	9,462	-615	-6.1
	2013/14	9,494	11,432	1,939	+20.4

Source: Central Electricity Authority, *Load Generation Balance Report 2013-14*, June 2013.

B. Review of the Progress and Sustainability of the Institutions Created by Reforms

10. As the reform of the neighboring Orissa State Electricity Board in the 1990s showed, a professional management to ensure sustainability of the newly formed T&D companies as well as other supporting institutions, including the regulatory body, is absolutely critical to the success of the reform in the long term.[5] Professionally managed successor generation and T&D companies, as well as regulatory bodies must work autonomously with the right incentives. As Shahi (2006) had pointed out, this was deemed to be a more challenging task for Madhya Pradesh with its substantial share of agricultural consumption (e.g., 41% in 2000 in Madhya Pradesh compared to 5% in Orissa). The reform programs conducted by ADB, Department for International Development (DFID) and Canadian International Development Agency (CIDA) all emphasised the need for improved performance of the institutions, especially that of the Madhya Pradesh State Electricity Regulatory Commission. A number of performance criteria were set for all of the relevant power utilities. These criteria comprehensively captured all aspects of governance and measured the achievement of the utilities against set standards. The Table 3 summarizes these criteria and the performance.[6]

Table 3: Review of Progress of Madhya Pradesh Power Sector Organizations

Performance criteria	Status	Comments
Formation of new organizations as per plan: Personnel and assets transferred to successor companies	The goal is expected to be fully achieved by end of 2013. In 2010, all assets and 98% of personnel have been transferred and financial reporting have been started. In 2012, revenue collection accruing directly to fully	The new organization structure has been estimated to reduce wages by 12.6% ($38 million per year). Opening balance sheets of new organizations have been issued and approved by the Government of Madhya Pradesh. Performance Based Promotion scheme have

[5] R.V. Shahi. 2006. *Indian Power Sector: Challenges and Reform*, Ch 33 on SEB Reform, 2006. Delhi.
[6] DFID. 2012. *Annual Review of Madhya Pradesh Power Sector Reform Phase 2*, 2012. Delhi.

Performance criteria	Status	Comments
	autonomous utilities has taken place.	been introduced and Employee Service Rules for new recruits have been made operational in 2012.
Management structure: Boards with independent directors established and CMDs appointed on open selection basis	Completely achieved. Training on new and advanced management approaches have been completed in 2012.	According to DFID Annual Review: "Independent directors with substantial experience and expertise in the sector have been posted to boards of various companies."
Independent cash management, revenue target, and financial viability	Independent cash management scheme is already operational since 2011. Revenue collection has already improved by 2012 and future target to increase it further over the next 5 years have been set. Financial viability: Transmission company: 2013 Generation company: 2014 Distribution companies: 2016[a]	The independent cash management system of utilities accompanied with reasonable tariff hike is expected to increase revenue collection by on an average 15%- 17% despite just 4% annual average tariff increase over last 5 years. As per the financial restructuring plan (approved by the GOMP) transmission company and the west distribution company is expected to be profitable by FY2013. With all DFID recommendations approved and implemented, the generation company is expected to be profitable by FY2014. The other 2 DISCOMs are expected to earn profit by FY2015.
Implementation of cost-reflective tariff	Significant improvement in cost recovery: 95% in 2010 and 96% in 2012, despite an increase in cost of supply.[b]	Cost recovery in the sector has improved from less than 80% in FY2005[c] to over 94% in FY2010 and achieved the target of 96% for 2012. Industrial consumers were paying 40% for the domestic consumers in FY2005, which has now (FY2010) reduced to little over 20% and likely to meet the FY2012 target of 16%. Thus, the cross subsidies are declining.
Computerised systems: billing, online payment, customer feedback	Computerised billing system is already in place. Online payment system rolled out fully as of December 2012. Customer online grievance	Online bill payment system has been put in place by all the 3 DISCOMs although the coverage of customers has been only 17% of the total customers of 8.2 million and less than 1% of those covered actually use the facility. Bill collection has improved from 85%

Performance criteria	Status	Comments
	system in place in 9 out of 42 Circles.	in FY2005to 96% in FY2012.[d] 15 out of the 42 circles have already implemented online payment mechanism in the three DISCOMs in FY2010. The roll out has been completed in December 2012. Although there was a target set to roll out online customer feedback system in all Circles by December 2012, it has not been achieved yet.[e]
Aggregate technical and commercial (ATC) losses	Significant reduction in ATC has been achieved exceeding the FY2012 target and future targets up to FY2015 have been revised in light of this.	ATC was 44% in FY2006and a 35% target for FY2010 was set. In FY2010, the realized losses were 33%, i.e., exceeded the loss reduction target. FY2012 target of 28% has also been exceeded and the FY2015 target has now been revised to 18% (DISCOM-E), 16% (DISCOM-W) and 19% (DISCOM-C).[f]
Private sector investment in generation	In May 2012, Madhya Pradesh Investment in Power Generation Projects Policy for IPPs have been enacted.[g] The long term target is for 50 GW including 10 GW by 2012. There has been significant activity already including 24 MOUs signed in 2012 for a total capacity of 31,480 MW.	A total of 49 MOUs have been signed under the old and new policy taken together with a total capacity of 67,546 MW. A total capacity of over 10,000 MW is in various stages of implementation.[h] A benefit- cost analysis done by the DFID consultants noted that: "..an additional 3,148 MW of concessional power will be available to the state (compared to the Old Policy) with a an additional benefit of Rs431.87 billion (£6 billion) to the state. In addition this will enable the state to raise revenue to the tune of Rs252.83 billion (£3.5 billion) from electricity duty and cess."
Renewable energy investment	A target of INR 12.5 billion was set for 2012 that has been exceeded. There are very significant investments in solar and wind that are forthcoming.	MP currently has 386 MW of wind and an estimated 270 MW of solar capacity.[i] There is an estimated 870 MW of additional solar investment worth INR 10 billion that is likely to be achieved by June 2014.[j] There are proposals for 2,100 MW of wind in the state that are worth INR 12.7 billion.

[a] As noted in DFID Annual Review spread sheet A2 Output 1-5.
[b] MP Electricity Regulatory Commission, *Retail Tariff Order for 2013-14*. May 2013.

[c] ADB Independent Review report, *ibid*
[d] Collated from Annual Reports of Discoms, 2012.
[e] Central Discom Annual Report 2012-13. http://www.mpcz.co.in/portal/Bhopal_home.portal. The DFID review suggests that this is also applicable for the other two Discoms.
[f] MP Electricity Regulatory Commission documents.
[g] Policy document is available online: http://dit.mp.gov.in/documents/10180/045b76fa-fd69-4c01-9b6e-32360771761e
[h] MPSEB Annual Report 2012-13. This information is also broadly in line with DFID review.
[i] Ministry of New and Renewable Energy Annual Report 2012-13, June 2013. http://mnre.gov.in/mission-and-vision-2/publications/annual-report-2/
[j] Government of MP publication titled *Renewable Energy Sector*, May 2013. Available online: http://www.akvnjbp.org/downloads/summit2013/Sectoral%20Profiles/RENEWABLE%20ENERGY.pdf

11. It is worthwhile to highlight that there has also been remarkable progress on corporate governance that includes:

(i) Introduction of a fully functional independent regulator to monitor and sustain ;
(ii) Public disclosure of operational and financial performance of the utilities in a bid to improve transparency;
(iii) Introduction of a new corporate culture through commercialization and delegation of power to the utility management;
(iv) Appointment of independent board of directors,
(v) Major changes in the HR policy including introduction of performance based incentive and promotion scheme, recruitment and training policy;
(vi) Changes in procurement policy including procurement manual and standard bid documents; and
(vii) Promotion of private sector participation in generation through IPP policy, public private partnership in transmission and distribution (distribution franchisee model in 9 districts)

12. In addition to the performance review in, it is also useful to note some of the institutional developments that took place since early nineties, to gain a more holistic understanding of the power sector in Madhya Pradesh. The enactment of Madhya Pradesh Electricity Act of 2001 clearly delineated the responsibilities for overall sector formulation, economic regulation, and utility function among Madhya Pradesh Government, MPSERC, and MPSEB and its successor entities, respectively. The prevailing institutional mechanism for tariff setting through the nineties was highly politicized was set significantly below cost of supply. Although abundance of cheap coal in the nineties had the cost of supply around Rs2 for kWh, the average realized tariff was below Rs1.50 through the nineties, even after industrial and commercial customers paying substantially higher than the cost of supply. The cross-subsidies from industrial/commercial consumers to agricultural and residential consumers were no longer sustainable as industrial consumers were increasingly resorting to captive power generation. Under MPSERC's Tariff Orders, the average domestic tariff increased from Rs2.36 per kWh in FY2002 to Rs4.80 per kWh in 2012. The agricultural tariff increased more sharply from Rs0.90 per kWh in FY2002 to Rs3.80 per kWh in FY2012. Cost reflectivity of tariff for agricultural customers expressed as a percentage of the average cost of supply improved from 27% in FY2004 to 75% in FY2010. The cross-subsidy from HV consumers (mainly industrial) to LV consumers (mainly residential and agricultural) has been significantly reduced from Rs. 1.73/kWh in 2004 to Rs0.5 per kWh in 2013. A transparent tariff- setting mechanism has clearly worked to increase the level of cost recovery. The 2013 tariff order issued by the MPSERC notes the following cost recovery for FY2012 and FY2014:

(i) Domestic: 97.85%
(ii) Industrial: 122.29%, and
(iii) Agriculture: 75%.

13. Although agricultural customers continue to get some subsidy at the expense of industrial customers paying above the cost of supply, the gap has reduced significantly over the years. That said, subsidized agricultural consumption is a source of financial stress for the DISCOMs that continues to prevent it from getting into a profitable state. According to the latest survey by Power Finance Corporation (2013), agricultural sector accounts for 31 per cent of the energy consumption but only 13% of the revenue. It is a bigger consumer of energy compared to the industries that consumes 25% of energy and accounts for 41% of the revenue.[17] Residential tariff, however, have aligned very closely to cost of supply notwithstanding the fact that the cost of supply has increased substantially to Rs4.90 per kWh in FY2012.

14. The Government of Madhya Pradesh (GOMP) allowed MPSERC to act as an independent economic regulator and did not interfere with tariff setting based on full cost recovery. Through fiscal allocations, GOMP has promptly paid the tariff subsidies that it provided to residential consumers below the poverty line and for agricultural consumers. MPSERC has been constituted as an independent regulatory agency for the sector. Its three commissioners are retired public servants. MPSERC has instituted a transparent tariff- setting mechanism where the tariffs are set on the basis of the tariff applications submitted by each regulated entity and taking into account the reasonable cost of supply and future investment requirement. Tariffs have been gradually increased to achieve near 100% cost of the supply today including minimal cross-subsidy. This is in line with the agenda that MPSERC initiated in 2007 in the form of a multiyear tariff-setting framework with the aim of gradually phasing out the cross-subsidies in the sector.

15. MPSERC has also assumed progressively stringent performance norms for tariff setting to encourage operational efficiency improvements in the sector. MPSERC has over the years revised the loss reduction norms set for distribution companies taking into account the constraints faced by the distribution companies. MPSERC also set technical performance standards and service quality standards and encouraged the distribution companies to increase consumer metering, especially for agricultural consumers. The regulator's role in incentive-based tariff setting with the objective of improving technical performance such as voltage and frequency stability and commercial efficiency of electricity distribution including the reduction of ATC losses has increased with the introduction of multiyear tariff setting in 2007. MPERC has set aggressive targets for loss reduction during the next control period as shown below:

[17] Power Finance Corporation, *Report on the Performance of the Power Sector*, Section 5.5., 2013.

Year	FY 2008-09 (Actual)	FY 2009-10 (Actual)	FY 2010-11 (Actual)	FY 2011-12 (Actual)	FY 2012-13 (Actual)	FY 2013-14 (Target)	FY 2014-15 (Target)	FY 2015-16 (Target)
AT&C Loss level in %	39.52%	37.79%	36.45%	30.99%	27.11%	22.00%	19.67%	17.33%

16. The DISCOMs are committed to reducing the losses through specific programs like the feeder separation project, RAPDRP, etc. which should further bring down the losses.

17. However, the regulatory interventions have largely been limited to tariff setting without explicitly focusing on enhancing financial viability of the utilities. Subsidies have been reduced but not eliminated. MPSEB and its successor companies continued to suffer from cash flow shortfalls as a result of the high ATC losses, subsidies and fuel costs. The cash deficit of the power sector in 2009 exceeded Rs25 billion excluding the tariff subsidies. Although GOMP has financed the cash deficit and investment needs in the past, the performance of the sector has to be significantly improved to achieve financial sustainability. Although the regulatory and institutional reforms were implemented as intended, there is significant room for improvement in the performance of sector companies, mainly DISCOMs, with the possible exception of MP Transco.

18. An extensive reform process for a financially starved entity obviously faced difficult challenges. As we have noted, the initial disaggregation of MPSEB took place in a manner that put the onus of most of the financial hardship on MPSEB. This led to litigation and delayed the implementation of the sector development program. MPSEB's poor financial health following the initial separation from MPEB also led to other problems, namely, introduction of a scheme to competitively allocate the Escrow cover for PPAs that got embroiled into protracted litigation with the IPPs. These litigations eventually required a direction from the Supreme Court.

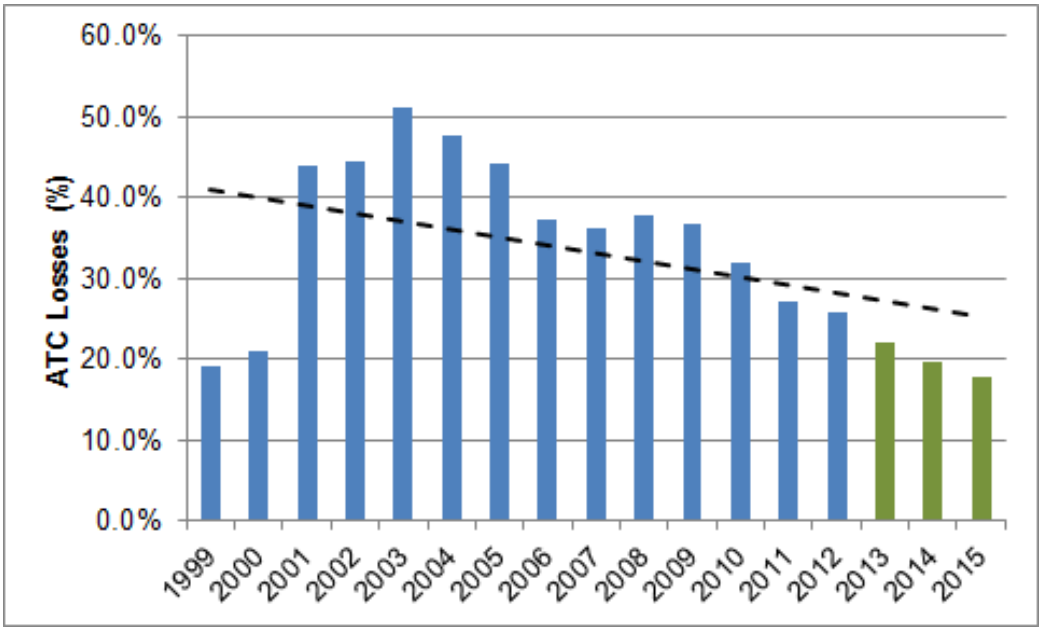
19. The GOMP also undertook financial restructuring to help the DISCOMs come out of accumulated losses. It approved the revised financial restructuring plan (FRP) for the power sector in July 2011. The key features of the revised FRP includes providing an interest holiday for three years (effective from 2011) to ensure that the distribution companies have some relief in the cash flows. At the end of first three years, the interest rate applicable would be the base rate of State Bank of India (SBI). Further, the GOMP supported the power sector by conversion of outstanding working capital loans from GOMP into perpetual loans. It also allowed retention of Electricity Duty (ED) and Cess by the utilities for a period of three years, retention of power purchase payables for Sardar Sarovar and conversion of these outstanding payables into perpetual loans. The targeted turnaround period for DISCOMs is 6 years (by 2017) and they will be able to sustain without government support after that.

20. A second set of challenges related to the management of human resources. A further disaggregation of MPSEB into generation, transmission and distribution had to be done through direct assignment of functions and positions in MPSEB, which did not always fit the objective, priority and business processes of independent utilities. Given that MPSEB had stopped recruitment some 15 years ago, the unbundled utilities also ended up with an ageing workforce. There was also an acute shortage in some technical areas and surplus workforce in non-technical areas. The introduction of a performance based bonuses and promotion scheme was also challenging and one that requires a "significant cultural change. After achieving the financial independence now the companies are hiring new staff.

C. Effects of Reform on Service Quality, Loss Reduction, Energy Security and Overall Development of the State

21. Figure 5 shows the ATC losses from 1999-2012 and the forecast that appears in MPSERC 2013 Tariff Order for FY2013-FY2014. If we ignore the losses for 1999-2000 which is hard to compare in any case because of the split in the system, it is evident that ATC losses have generally decreased over the years from more than 40% to below 30% since 2001. The 2013 Tariff Order also targets losses to be below 20% by FY2016. Loss reduction target in the FY2013 have been met. If the projected loss reduction targets are met, it would mean that ATC losses for FY2011-2015 at 22.5% would be less than half of ATC losses over 2001-2005. Together with an increase in generation capacity, collection efficiency, the loss reduction would be a key to superior financial performance of the sector going forward.

Figure 2: Aggregate Technical and Commercial (ATC) Losses: 1999-2012 and Forecast (2013-2015)



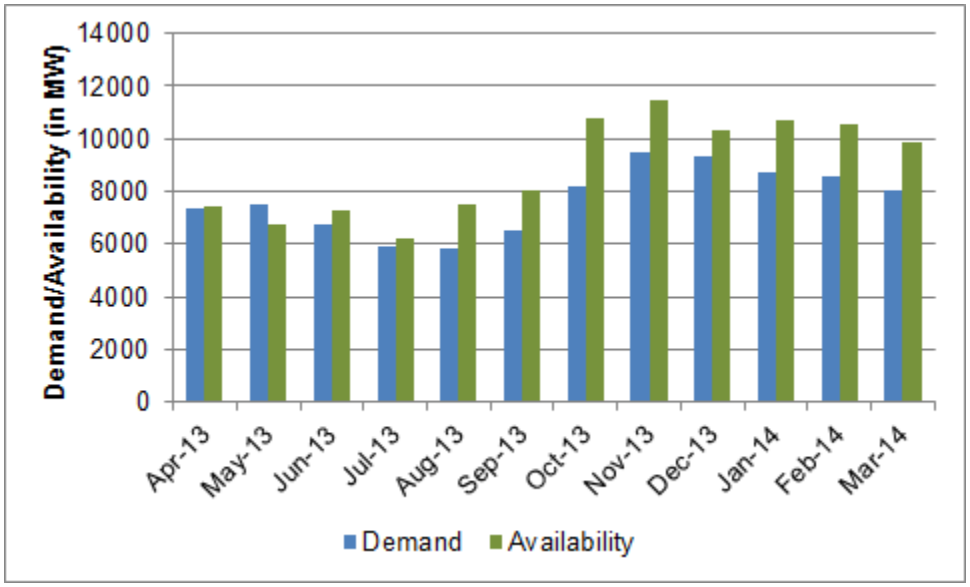
Source: Abhyankar (2005) for 1999-2004, ADB (2012) for 2005-2009, and MPSERC (2013) for 2010-2015.

22. As noted before, there is significant expansion of generation capacity that has already taken place in the last 2-3 years. There are two significant thermal projects (Shree Singaji 2X600 MW and Satpura Extension 2X250 MW) that are due for completion later in 2013 that alone will add 1,700 MW of new capacity to the state-owned Madhya Pradesh Power Generation Company Limited (MPPGCL). There are other thermal projects by the generation company that will be completed in the next year adding another 3,000 MW of new capacity. There are also several Central Sector generation projects being commissioned in the state. Finally, as noted before there are renewable (including hydro) projects that are progressing – mostly by IPPs – that will also add substantially to the generation capability and energy diversity in the state. CEA's latest load generation balance report shows for the first time in the history of the state that there will be significant surplus throughout the years including the summer months (Figure 6).

23. Lack of infrastructure, especially severe peak and energy shortage that in some years exceeded 30%, has often been cited as a major handicap for the development of the state. A

reversal of the situation for the state to have surplus power is, therefore, a very significant achievement for the development of the state.

Figure 3: Peak Demand and Generation Availability 2013-2014



Source: CEA Load Generation Balance Report (2013).

D. Lessons Learned and Remaining Challenges

24. **Significant performance improvement has eventuated in the last three years through a set of holistic measures that have gone beyond regulatory reforms.** The corporatization of the government utilities including performance based incentive, change in management style, extensive computerisation have all contributed to a decade-long reform programme to bring it to fruition. That said, there is still some way to go considering that the Madhya Pradesh power sector as a whole and all three DISCOMs are still incurring losses, albeit at a lower rate.

25. **The loss reduction service quality improvements would continue to be key focus areas.** The distribution loss reduction initiatives have seen mixed results. While the historical loss reduction is impressive, current loss levels are far above the acceptable losses of a modern electricity distribution system. Continuous and consorted efforts are required to reduce technical and commercial losses. Now that power utilities are at the verge of becoming financially sustainable institutes, they should plan ahead for aligning the service quality with consumer preferences.

26. **Given the positive outcomes, the reform efforts must continue including a complete removal of cross-subsidy and achievement of full cost recovery**. As a result of reforms and regulatory mechanism, the overall cost recovery has improved from 80% in FY2005-06 to around 95% by FY2011-12. A continuous focus and regular tariff revision through institutionalizing the tariff filling is required so as to achieve the full cost recovery. Similarly, on the tariff rationalization, there has been significant improvements. The cross subsidy level for the industrial consumers has gradually reduced from almost 35% in FY2007 to around 14% in FY2013. The recovery from domestic consumers has increased from 86% in FY2007 to around 95% in FY2012 which is a positive sign (DFID review report 2012).